

Fish Tales to Ensure Health



Fishermen are known for telling tales of their catches that tend toward exaggeration. A new kind of fish tale, however, doesn't stretch the truth when making a point to the Hmong community in Milwaukee, Wisconsin, about the hazards of eating fish contaminated with methylmercury and polychlorinated biphenyls. A video produced by the Community Outreach and Education Program at the NIEHS Marine and Freshwater Biomedical Sciences Center at the University of Wisconsin-Milwaukee communicates in a simple, understandable, and culturally sensitive way the risks of eating contaminated fish and teaches methods of catching and preparing fish that can reduce these risks.

The Hmong, refugees from Southeast Asia, are avid anglers and traditionally fish to support large families with an average of 7-8 children. But these fishers often have little understanding of the pollution and

with eating contaminated fish in a way that results in active consideration of the issues within the context of the group's fishing practices.

The centerpiece of the outreach program is a bilingual Hmong-English video titled *Nyob Paug Hawv Qab Thu* (*Below the Surface*). The video presents scientifically sound information on safe fish consumption. It also acknowledges the Hmong cultural tradition of fishing while showing which fish are safest to catch and ways to make fish safer to eat prior to cooking, including how to remove fins, fat, and other parts of the fish where toxicants accumulate. The video is packaged with a laminated card that provides shorthand tips on safer catching and preparation, and a kitchen magnet with similar information.

To date, approximately 750 video/card/magnet packets have been distributed by community workers through local stores, doctors' offices, and Hmong festivals where the video has been showcased. Follow-up to assess the impact of the videos is currently under way.

John Dellinger, a center researcher who studies the effects of fish consumption in Native American populations and who is featured in the film, has also shown the video or supplemental materials to audiences of Intertribal Council and InterTribal Fisheries Assessment Program officials in the Upper Peninsula of Michigan, as well as to Tahitian Ministry of Health officials. Officials of the Michigan Ojibwa and the government of Tahiti have asked that the film be adapted for their

communities. Dellinger plans to work on productions for both of these groups in 2005.

In an extension of the community outreach program, the center has developed a life sciences classroom module for middle-school students that explores the behavioral effects of mercury and lead contamination, both of which affect inner-city Hmong populations. The module provides a hands-on, inquiry-based experiment about a complex organism's behavioral integration with its environment, and what happens when that environment becomes contaminated.

In the module, students observe fathead minnows in the classroom to learn and characterize their normal reproductive behavior. Students then watch a video produced by the center that shows the behavior of mercury- and lead-exposed fish. Based on their understanding of normal behavior, students analyze the differences that exposure to the toxic metals makes in the fish. The differences are dramatic because although the behavior is affected, the fish show no outward physiological signs of toxicity. Teachers can then draw an analogy to human exposure to mercury through fish consumption, and to lead through paint chip ingestion, and the potential resulting effects on human behavior.

Teachers were trained during a summer workshop to teach and evaluate the experiment. In the next two years, 11 teachers from Milwaukee public schools and from area suburban schools with the largest Hmong student populations will introduce this module, using the video as a cross-cultural tool to support it.

—Kimberly G. Thigpen, David Petering



contamination of the waterways of Wisconsin and the fish that populate them. The goal of the center program, developed in partnership with the Hmong/American Friendship Association and the Sixteenth Street Community Health Center, is to communicate to the inner-city Hmong population the hazards associated



New tool for the tacklebox. Laminated cards with fish safety information are distributed to Hmong anglers.



Translating into health. A bilingual video educates Hmong fishers on health risks and safety measures.

For More Information

NIEHS/University of Wisconsin-Milwaukee Marine and Freshwater Biomedical Sciences Center
<http://www.uwm.edu/Dept/MFB/>

Hmong/American Friendship Association
<http://www.hmongamer.org/>

Sixteenth Street Community Health Center
<http://www.ssche.org/>

Headliners

NIEHS-Supported Research

Breast Cancer



Regular Aspirin Use May Decrease Breast Cancer Risk

Terry MB, Gammon MD, Zhang FF, Tawfik H, Teitelbaum SL, Britton JA, Subbaramaiah K, Dannenberg AJ, Neugut AI. 2004. Association of frequency and duration of aspirin use and hormone receptor status with breast cancer risk. *JAMA* 291:2433–2440.

Aspirin has been used as a nonprescription pain reliever for more than 100 years, with more than 80 million tablets currently consumed in the United States every day. However, it was not until the 1970s that the mechanism of action was discovered; aspirin was found to inhibit the production of proinflammatory prostaglandins. In the past 20 years, regular aspirin use has been shown to protect against heart disease, stroke, and colorectal cancer. Now NIEHS grantee Marilie Gammon of the University of North Carolina School of Public Health and colleagues report that regular aspirin use may also protect against breast cancer.

Research suggests that inhibition of prostaglandin synthesis may prevent cancer. Cyclooxygenase (COX) is involved in the synthesis of prostaglandins. Aspirin and other nonsteroidal anti-inflammatory drugs (NSAIDs) are known to block the active site of COX and, therefore, inhibit prostaglandin production. Because the final reaction in the synthesis of estrogen depends upon a cytochrome P450 enzyme that is stimulated by prostaglandin E_2 , inhibition of prostaglandin production will also decrease the production of estrogen. Given the importance of estrogen in the development of breast cancer, Gammon and colleagues undertook an epidemiologic study to determine whether there was any association between regular NSAID use and reduced risk of breast cancer.

The team conducted a population-based study of 1,442 women with breast cancer and 1,420 controls. The women were interviewed and asked to report their intake of aspirin, ibuprofen, and acetaminophen. Dose was not considered; instead, the team looked at duration and frequency of use. Regular use was defined as women who took aspirin at least 4 times per week for at least 3 months and initiated use at least 1 year prior to the reference age (age at diagnosis of breast cancer or corresponding age for controls). All exposure information was truncated to 12 months prior to the reference age.

Regular aspirin use was inversely associated with hormone-responsive breast tumors, with the strongest results for women who took 7 or more tablets per week. The results of ibuprofen use were generally weaker. There was no association with use of acetaminophen, which does not inhibit prostaglandin synthesis.

This study adds to the growing body of data that supports the regular use of aspirin as an effective chemopreventive agent for hormone-responsive breast cancer tumors. This effect most likely occurs through the inhibition of prostaglandin and subsequent inhibition of estrogen biosynthesis. However, the reduced risk must be confirmed before clinicians can make definite recommendations to women at risk for breast cancer. —**Jerry Phelps**